



THE ATMOSPHERIC RESERVOIR

Examining the Atmosphere and Atmospheric Resource Management

Let it snow, let it snow, let it snow!

By Aaron Gilstad

It's January, and winter is upon us once again. Luckily, November and December gave us a good break from the cold weather we had in October. It wouldn't have been the first nor the last North Dakota winter that ever started in October, but I for one am thankful for these past several weeks of "warm" weather. But, now that it is winter we are bound to be getting some snow, whether we like it or not. Moisture content of snow may vary greatly depending on the region, and how much will depend not only on where you are but how the snow is measured.

The difficulty is that a simple rain gauge, like the wedge-type gauges used by Atmospheric Resource Board Cooperative Observer Network (ARBCON) volunteers, will not give an accurate reading. In fact, the data for April and May had to be excluded from the 2002 ARBCON season total precipitation map due to snow contamination from widespread spring snow storms. So, how does one get an accurate measurement of snowfall?

First, one must understand the problems that breed inaccuracy to remedy those problems. Wind is one major cause of difficulty, causing drifting in some areas while clearing other areas of any snow at all. Still other problems arise with melting when the ground is still warm or when conditions are right for a mix of snow and rain. Finally, measuring the snow can be tricky depending on

what method you use, but if you're planning to take the annual snowfall record from Mt. Baker Ski Resort in Washington, you will want to use the official National Weather Service (NWS) guidelines.

In years past snow was measured using an Alter shield added to the official NWS eight inch rain gauge.

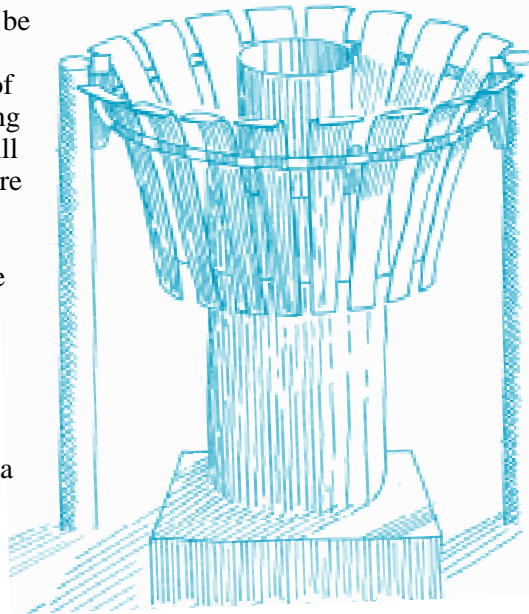


Illustration of a standard National Weather Service gauge with an Alter shield.

The Alter shield was essentially a cone shaped fence placed around the gauge to work as a wind break. It has since been found that for the sake of accuracy in windy conditions a single measurement will not do.

The new NWS guidelines for measuring snow are set up to address as many problems as possible. The NWS requires a total of ten measurements in a designated snow field using a snowboard such

as a piece of plywood and a measuring stick. The snow field should be located in an area with a minimal effect from blowing and drifting. Every six hours one should measure the snow accumulation on each of their ten snowboard sites. After the measurement is taken, the board must be cleared to start collection for the next reading. When all ten readings have been taken, calculate the average and record all your measurements and times. In addition to measuring the snow as it accumulates for each six-hour period, one must also have a snow stick in place to keep a record of snow depth throughout the season. The recording process will be essential in making a bid for the record books.

Although there are some problems, such as mixed precipitation, that are impossible to fix, the new system of measurement using the snowboards does address several problems. It addresses drifting and clearing because of wind through averaging. It helps mitigate some of the melting problem as long as the snowboard is not dark in color, since the board is unlikely to hold as much heat for as long a time period as the earth does. So, as long as you are diligent in measuring and recording your snow measurements you can be assured of your place in the record books, if your seasonal snow total exceeds 1,140 inches, that is. Best of luck! ■

Atmospheric Resource Board
North Dakota State Water Commission
900 East Boulevard, Bismarck, ND 58505
701) 328-2788
Internet: <http://www.swc.state.nd.us/ARB/>
ND Weather Modification Association
PO Box 2599, Bismarck, ND 58502
701) 223-4232